

### Patent Claims

1. Finely divided hard moulded body comprising materials having a hardness  $\geq 7$  on the Mohs hardness scale which form the moulded body or are present directly on a finely divided substrate as impermeable coating in the form of one or more layers.
2. Finely divided hard moulded body according to Claim 1, characterised in that it is a pigment.
3. Finely divided hard moulded body according to Claim 1 or 2, characterised in that the moulded body or the finely divided substrate is in flake form.
4. Finely divided hard moulded body according to one of Claims 1 to 3, obtainable by wet-chemical application of a precursor to a support, drying, detachment from the support and subsequent calcination with formation of materials having a hardness  $\geq 7$  on the Mohs hardness scale or by application of materials having a hardness  $\geq 7$  on the Mohs hardness scale to a support by CVD and/or PVD processes and subsequent detachment from the support.
5. Finely divided hard moulded body according to one of Claims 1 to 3, obtainable by wet-chemical precipitation of a primary layer comprising one or more layers on a finely divided substrate and subsequent calcination with formation of an impermeable coating in the form of one or more layers of materials having a hardness  $\geq 7$  on the Mohs hardness scale on the substrate or by single or repeated coating of a finely divided substrate with materials having a hardness  $\geq 7$  on the Mohs hardness scale by CVD and/or PVD processes.

6. Finely divided hard moulded body according to Claim 1, characterised in that the finely divided substrate comprises natural or synthetic mica, metal flakes, glass flakes, SiO<sub>2</sub> flakes, TiO<sub>2</sub> flakes or iron oxide flakes.
- 5 7. Finely divided hard moulded body according to Claim 6, characterised in that the metal flakes consist of aluminium, titanium, bronze, steel or silver.
- 10 8. Finely divided hard moulded body according to Claim 1, characterised in that the material having a hardness  $\geq 7$  on the Mohs hardness scale comprises aluminium oxide, zirconium oxide and/or mixtures thereof.
- 15 9. Finely divided hard moulded body according to one of Claims 1 to 8, characterised in that the thickness of the finely divided moulded body comprising a material having a hardness  $\geq 7$  on the Mohs hardness scale is 0.05 to 6  $\mu\text{m}$  or the thickness of the coating applied to a finely divided substrate in the form of one or more layers of materials having a hardness  $\geq 7$  on the Mohs hardness scale is 40 to 400 nm.
- 20 10. Finely divided hard moulded body according to one of Claims 1 to 9, characterised in that the finely divided moulded body has additionally been coated with one or more transparent, semi-transparent and/or opaque layers comprising metal oxides, metal oxide hydrates, metal suboxides, metals, metal fluorides, metal nitrides, metal oxynitrides or
- 25 mixtures of these materials.
- 30 11. Finely divided hard moulded body according to Claim 10, characterised in that a further layer of materials having a hardness  $\geq 7$  on the Mohs hardness scale has additionally been applied.

12. Finely divided hard moulded body according to Claim 11, characterised in that the thickness of the further layer of a material having a hardness  $\geq 7$  on the Mohs hardness scale is 20 to 80 nm.
- 5 13. Process for the production of finely divided hard moulded bodies according to Claim 1, characterised in that a moulded body is formed from materials having a hardness  $\geq 7$  on the Mohs hardness scale or a finely divided substrate is provided with an impermeable coating in the form of one or more layers of materials having a hardness  $\geq 7$  on the Mohs hardness scale.
- 10 14. Process according to Claim 13, characterised in that a precursor is applied to a support by wet-chemical methods, dried, detached from the support and subsequently calcined with formation of a moulded body from materials having a hardness  $\geq 7$  on the Mohs hardness scale, or materials having a hardness  $\geq 7$  on the Mohs hardness scale are applied to a support by CVD and/or PVD processes and subsequently detached from the support.
- 15 15. Process according to Claim 13, characterised in that a primary layer comprising one or more layers is precipitated onto a finely divided substrate by wet-chemical methods and calcined with formation of an impermeable coating in the form of one or more layers of materials having a hardness  $\geq 7$  on the Mohs hardness scale or a substrate is coated one or more times with materials having a hardness  $\geq 7$  on the Mohs hardness scale by CVD and/or PVD processes.
- 20 25 30 16. Process according to one of Claims 13 to 15, characterised in that the material having a hardness  $\geq 7$  on the Mohs hardness scale comprises aluminium oxide, zirconium oxide and/or mixtures thereof.

- 5 17. Process according to one of Claims 13 to 16, characterised in that the moulded body is additionally coated with one or more transparent, semi-transparent and/or opaque layers comprising metal oxides, metal oxide hydrates, metal suboxides, metals, metal fluorides, metal nitrides, metal oxynitrides or mixtures of these materials.
- 10 18. Process according to Claim 17, characterised in that the one or more transparent, semi-transparent and/or opaque layers are applied by wet-chemical, sol-gel, CVD and/or PVD processes.
19. Process according to Claim 17 or 18, characterised in that the applied transparent, semi-transparent and/or opaque layers are calcined.
- 15 20. Process according to one of Claims 17 to 19, characterised in that a further layer of materials having a hardness  $\geq 7$  on the Mohs hardness scale is additionally applied.
- 20 21. Use of finely divided hard moulded bodies according to Claim 1 in polymer matrices for increasing the abrasion stability.
22. Use according to Claim 21, characterised in that the polymer matrices are plastics, paints, coatings or inks.
- 25 23. Abrasion-stable polymer matrices comprising finely divided hard moulded bodies according to Claim 1.